Level 3 Develop software using Visual Basic.NET (7266/7267-307)

e-Quals
Assignment guide for Candidates
Assignment D

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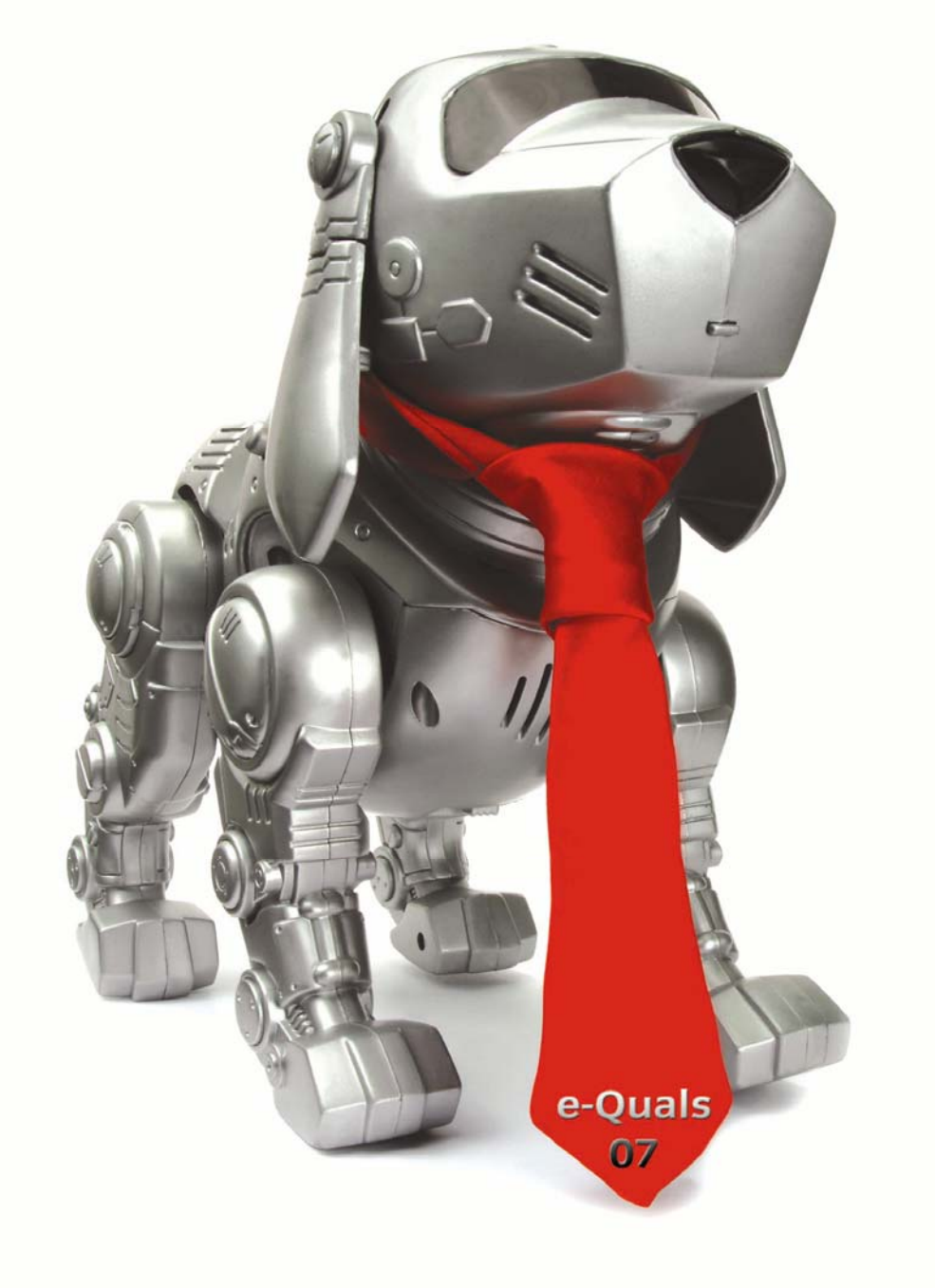

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City & Guilds
1 Giltspur Street
London EC1A 9DD
T +44 (0)20 7294 2800
F +44 (0)20 7294 2400
www.cityandguilds.com
learnersupport@cityandguilds.com

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Level 3 Develop software using Visual Basic.NET (7266/7267-307) Assignment D

Introduction – Information for Candidates

About this document

This assignment comprises part of the assessment for Level 3 Develop software using Visual Basic.NET (7266/7267-307).

Health and safety

You are asked to consider the importance of safe working practices at all times.

You are responsible for maintaining the safety of others as well as your own. Anyone behaving in an unsafe fashion will be stopped and a suitable warning given. You will **not** be allowed to continue with an assignment if you compromise any of the Health and Safety requirements. This may seem rather strict but, apart from the potentially unpleasant consequences, you must acquire the habits required for the workplace.

Time allowance

The recommended time allowance for this assignment is **6 hours**.

Level 3 Develop software using Visual Basic.NET (7266/7267-307) Candidate instructions

Candidates are advised to read **all instructions** carefully before starting work and to check with your assessor, if necessary, to ensure that you have fully understood what is required.

Time allowance: 6 hours

Assignment set up:

This assignment is made up of **two** tasks

- **Task A** - provides a detailed design specification for software to access a database with a graphical user interface.
- **Task B** - provides presentation criteria that should be followed by candidates when producing their work.

Scenario

A software training company Atlantic Trainers specialises in delivering training in various programming languages and website design. They have offices in London and New York with trainers attached to each of those offices. Atlantic Trainers wants to develop a program with a Graphical User Interface (GUI) to track trainers primary skills and their willingness to travel to or from New York/London. As a contracted employee of Atlantic Trainers, you have been asked to design, create and test the software to access an external database (**Trainers**) and its table (**AllTrainers**). The interface to the database table must enable the user to do the following:

- display individual records
- add a new record
- delete a record
- edit a record
- update a record
- cancel amendments for a record
- cancel all amendments made to the table
- clear all fields pending creation of a new record.

In addition, the entry form (frmFrontForm) is to show the current times in London and New York.

A pre-prepared database (**Trainers**) containing staff details is to be used. The database contains a single table named **AllTrainers** with the following fields:

Field Name	Data Type	Field Length
EmployerID (Primary Key)	Text	10
Surname	Text	30
Forename	Text	20
Ext	Numeric	Integer
Skill	Text	20
LastCourse	Date	dd/mm/yyyy

AvailToTravel	Logical (Yes/No)	1

The **EmployerID** field is a primary key and there cannot be duplicate entries or a zero-length entry in this field.

Task A

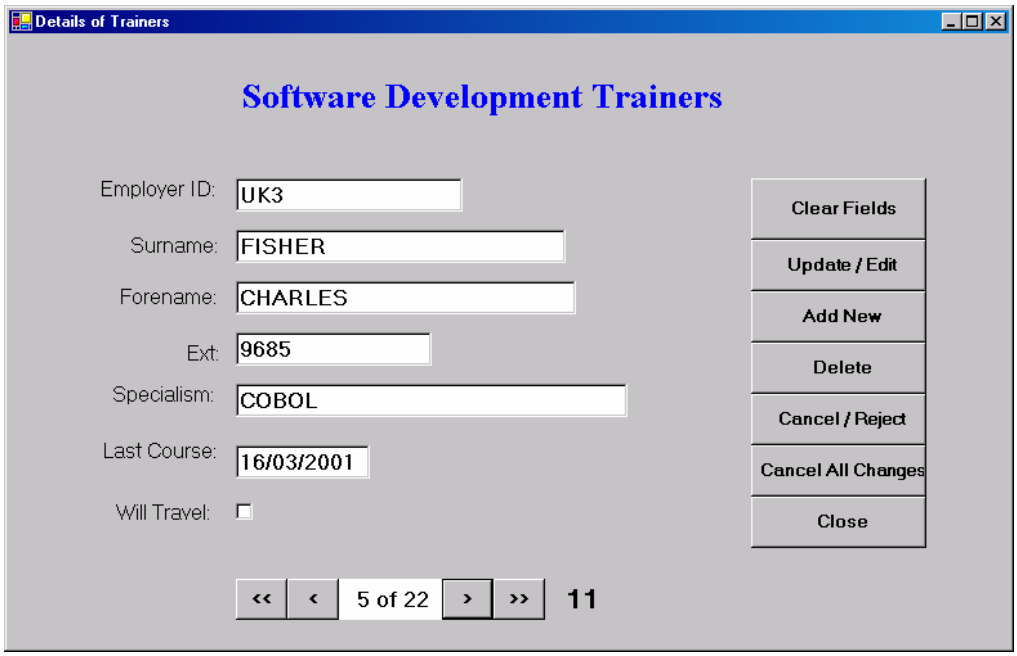
Candidates should use the following detailed specification to fulfil the company's requirements.

In this task you are required to design, create and test an application to access an external database (**Trainers**) with a table (**AllTrainers**), using a database connection and a data form.

Copy the database file(s) provided by your centre into the same directory as your project. You are advised to make a backup copy of these files in another directory and to save the project at regular intervals.

The forms you create should look similar to those shown below. Note that you can select your own suitable logo for the form titled 'Atlantic Trainers' and save as frmFrontForm.

frmFrontForm



frmDataForm

1 Using the information supplied in the scenario and tasks below, design your solution on paper using pseudocode, flowchart or structured English.

2 Save the two forms as **frmFrontForm** and **frmDataForm** and the project as Atlantic Trainers.

3 Create the entry form similar to the form shown above (frmFrontForm) that includes

- a label for the heading **ATLANTIC TRAINERS** in bold, coloured blue and the font set to Times New Roman 24pt
- a company logo (selected by you) and positioned centrally on the form as above
- two controls and associated labels to display the times in London and New York. The control text is to be bold and a larger size (i.e. 14pt)
- two command buttons labelled 'Enter Database' and 'Exit'

4 Set the text property of form frmFrontForm to: **Atlantic Trainers** + *your name and the date*.

5 When the program runs

- frmFrontForm must be the first form displayed
- it must be of an appropriate size and displayed centre screen
- the current time in London is to be displayed
- the time structure is to be manipulated to show the current time in New York
- clicking on the 'Exit' button shall cause the program to terminate and the form close
- clicking on 'Enter Database' shall cause frmFrontForm to be hidden from view and frmDataForm opened and displayed.

6 Create a data form that shows a single record to appear similar to the form shown above (frmDataForm) and includes

- a label for the heading **Software Development Trainers** in bold, coloured blue and with the font set to Times New Roman 20pt
- seven controls and associated labels to display the record data
- navigation controls to move to the first, previous, next and last record
- an associated navigation label to show the current record and record count positioned between the first/previous and next/last record buttons
- a label to the right of the navigation controls to display a random number. The text is to be centralised and set to Sans Serif (or similar) 12pt, bold and coloured red.
- seven command buttons labelled Clear Fields, Update/Edit, Add New, Delete, Cancel/Reject, Cancel All Changes and Close adding the shortcuts as shown
- the data input controls receiving focus in an appropriate order.

7 Make a connection to the database **Trainers** using suitable parameters.

8 Insert code so that when the data form is loaded the dataset is loaded automatically and the data for the first record is correctly displayed in the controls.

9 Insert code for the Clear Fields, Update/Edit, Add New, Delete, Cancel/Reject, Cancel All and Close buttons.

- Clear Fields - removes any data displayed in the input controls
- Update/Edit - updates the current record displayed
- Add New - adds a new record to the data file
- Delete - deletes the current record displayed

- Cancel/Reject - cancels the current amendments
- Cancel All Changes - cancels all amendments made to the data file
- Close - closes frmDataForm and displays the frmFrontForm

10 Write code for the navigation controls to move to the first, previous, next and last records.

11 Write code to display the current record number and record total on the form. The output is to be displayed in the navigation label in the format of *'n of nn'* as shown on frmDataForm above.

12 Write code to generate a random number and display the number in a label to the right of the navigation buttons. If the navigation control for the first or previous record is selected the random number must be in the range of 1 to 10. If the navigation control for the next or last record is selected then the number displayed must be in the range of 11 to 20.

13 Insert the code required to handle errors for database access which prevents run-time errors.

14 Write code to validate input for the EmployerID. No duplicate entries are allowed. Output the following error message if the entry for EmployerID is duplicated.

Error Number	Error Message
1	Invalid – Duplicate EmployerID entered

15 Create a test plan with test data for the Clear Fields, Update/Edit, Add New, Delete, Cancel/Reject, Cancel All Changes and Close buttons on form frmDataForm, as well as entry of a new record with a duplicated EmployerID and document the expected results.

16 Implement the test plan, test the software using the test data, compare the actual results to the expected results keeping a log for each test which identifies any discrepancies between actual and expected results. Record any amendments made to correct errors found during testing.

17 Locate the EXE file or create if not automatically generated.

18 Run the executable file to demonstrate the software.

19 Print a program listing and screen prints of the forms frmFrontForm and frmDataForm.

Task B

Candidates should check that the program produced meets the following requirements.

1 The program must conform to the design specification.

2 The code must be structured.

3 The program uses the most appropriate controls and events.

4 Meaningful names are used for controls and procedures using consistent naming conventions.

Note

- Candidates should produce the following for their assessor:
  - a printed program listing
  - screen prints of forms frmFrontForm and frmDataFrom
  - test data, test plan, expected results, actual results, log of testing and test output
- At the conclusion of this assignment hand all paperwork and removable media to the test supervisor
- ensure that your name is on the removable media and all documentation

If the assignment is taken over more than one period, all removable media and paperwork must be returned to the test supervisor at the end of each sitting.

Published by City & Guilds
1 Giltspur Street
London
EC1A 9DD
T +44 (0)20 7294 2468
F +44 (0)20 7294 2400
www.cityandguilds.com

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